

Gleiss & Große

Patentanwälte
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ART 134 AMDT

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Claims

1. A nucleic acid sequence for use in cloning and expressing a root specific nucleic acid sequence in a plant which is selected from the group consisting of
- a) the nucleic acid sequence set out in SEQ ID No. 1 or a complementary strand thereof,
 - b) a nucleic acid sequence which has a degree of identity of more than 70 % to the nucleic acid sequence defined in (a) and
 - c) alleles of the nucleic acid sequence defined in (a) or (b).
2. The nucleic acid sequence of claim 1 which is selected from the group consisting of
- a) the nucleic acid sequence set out in SEQ ID No. 2 or a complementary strand thereof,
 - b) a nucleic acid sequence which has a degree of identity of more than 70 % to the nucleic acid sequence defined in (a) and
 - c) alleles of the nucleic acid sequences defined in (a) or (b).

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3. The nucleic acid sequence according to claim 1 or 2, which is selected from the group consisting of
- a) the nucleic acid sequence set out in any one of SEQ ID No. 3 to 11 or a complementary strand thereof,
 - b) a nucleic acid sequence which has a degree of identity of more than 70 % to the nucleic acid sequence defined in (a) and
 - c) alleles of the nucleic acid sequence defined in (a) or (b).
4. A nucleic acid sequence for use in cloning and expressing a root specific gene in a plant which is selected from the group consisting of
- a) the nucleic acid sequence set out in any one of SEQ ID No. 12 to 15 or a complementary strand thereof,
 - b) a nucleic acid sequence which has a degree of identity of more than 70 % to the nucleic acid sequences defined in (a) and
 - c) alleles of the nucleic acid sequence defined in (a) or (b).
5. The nucleic acid sequence of any one of the preceding claims, which is derived from maize.
6. A vector comprising the nucleic acid sequence of any one of the preceding claims.

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7. The vector of claim 6, which is a bacterial or viral vector.
8. The vector of any one of claims 6 or 7, wherein the nucleic acid sequence of any one of claims 1 to 5 is operably linked to a gene of interest.
9. The vector of claim 8, wherein the gene of interest is chosen from a gene which confers a character of agronomic or industrial benefit.
10. The vector of claim 9, wherein the gene which confers a character of agronomic or industrial benefit is a gene for resistance to infection by a virus, a gene conferring resistance to a herbicide or to an insecticide or, alternatively, a gene whose expression confers male sterility.
11. The vector of any one of claims 6 to 10, which comprises further regulatory elements directing or enhancing the expression of the gene of interest.
12. The vector of any one of claims 6 to 11, wherein the further regulatory elements are 5', 3' or 5' and 3' elements.
13. The vector of claim 12, wherein the 3' regulatory element is the poly A addition sequence of the NOS gene of *Agrobacterium tumefaciens*.
14. The vector according to any one of claims 6 to 13, which furthermore contains T-DNA.

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15. The vector of claim 14, which contains the left, the right or both T-DNA borders.
16. The vector according to claim 14 or 15, wherein the nucleic acid sequence is located within the T-DNA or adjacent to it.
17. The vector according to claim 16, wherein the nucleic acid sequence in conjunction with the gene of interest is located within the T-DNA or adjacent to it.
18. A host cell containing the vector of any one of claims 6 to 17.
19. The host cell of claim 18, which is a plant, yeast or bacterial cell.
20. The host cell of claim 19, which is a cell from a monocotyledonous or dicotyledonous plant.
21. A cell culture comprising a cell according to any one of claims 18 to 20.
22. A plant comprising a host cell according to any one of claims 18 to 20.
23. Seeds, propagation material, harvest material and plant tissue, comprising a host cell according to any one of claims 18 or 20 or derived from a plant according to claim 22.
24. A method of genetically modifying a cell by transforming a cell with a nucleic acid sequence according to any one of claims 1 to 5 or a vector according to any one of claims 6 to

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17, wherein the gene of interest contained in the vector is expressible in the cell.

25. The method of claim 24, wherein the cell is a plant, bacterial or yeast cell.

26. The method of claims 24 or 25, wherein the transformed cell is regenerated into a differentiated plant.

27. The method of any one of claims 24 to 26, wherein the cell is transformed by transfer of a vector or nucleic acid sequences from a bacterium to the cell.

28. The method of any one of claims 24 to 27, wherein the cell is transformed by direct intake of a nucleic acid sequence or a vector, by microinjection or particle bombardment with a nucleic acid sequence or a vector.

29. A method for isolating a root specific gene and/or root specific regulatory element from a plant, whereby a nucleic acid sequence of any one of claims 1 to 5 or a vector of any one of claims 6 to 17 is used to screen nucleic acid sequences derived from the plant.

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